

CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD
SAN FRANCISCO BAY REGION

ORDER No. R2-2008-0019

UPDATED SITE CLEANUP REQUIREMENTS FOR:

**SFPP, L.P., AN OPERATING PARTNERSHIP OF
KINDER MORGAN ENERGY PARTNERS, L.P.**

For the

**SFPP, L.P. BRISBANE TERMINAL
BRISBANE, SAN MATEO COUNTY**

The California Regional Water Quality Control Board, San Francisco Bay Region (hereinafter the Board), finds that:

- 1. Site Location:** The SFPP, L.P. Brisbane Terminal (herein referred to as the facility or the site) is located at 950 Tunnel Avenue in the City of Brisbane, just west of Highway 101 (Figure 1). The facility is located in a light-industrial area of Brisbane and is bordered by Tunnel Avenue to the east and south, Union Pacific Railroad tracks to the west, and the closed Brisbane municipal landfill to the north and east (Figure 1).
- 2. Site Description:** The facility is a bulk petroleum storage and distribution terminal that provides aviation fuel to San Francisco Airport as well as gasoline and diesel fuel to various retail stations. The eastern portion of the facility is located upon the closed Brisbane municipal landfill while the western portion is situated on a bedrock outcrop. Twenty one aboveground storage tanks (ASTs) reside on the western portion of the facility underlain by bedrock. Gasoline, diesel, and aviation fuels are brought to the facility via pipeline and are stored in the ASTs. The gasoline and diesel fuel stored in the ASTs is pumped into tanker trucks via five loading racks at the facility for distribution to Bay Area gasoline stations. Aviation fuel is piped directly from the facility to San Francisco Airport.
- 3. Adjacent Properties:** The Union Pacific Railroad tracks located to the west of the facility are part of an active railroad corridor. The closed Brisbane municipal landfill, which underlies the eastern portion of the facility and extends northward and eastward from the facility, is currently used for light industrial purposes associated with materials recycling, rock crushing, and soil stockpiling. A City of Brisbane corporation yard is located immediately south of facility and is used for vehicle maintenance. A wetland is located immediately adjacent to the northern facility boundary. A stream channel runs through the wetland and is culverted with a timber box. This “timber-lined” channel is tidally-influenced and drains 2,100 feet eastward across the Brisbane Landfill to San Francisco Bay. Northwest of the facility is the former Brisbane Railyard, which is undergoing environmental assessment and cleanup overseen by the Board and the California Department of Toxic Substances Control. Both the railyard and the Brisbane Landfill are owned by Universal

Paragon Corporation, which is considering future development of the properties for commercial and open space use. The City of Brisbane is lead agency for environmental review of redevelopment plans for these properties pursuant to the California Environmental Quality Act.

- 4. Site Ownership and History:** The facility was constructed in the 1960s and is currently owned and operated by SFPP, L.P., which is an operating partnership of Kinder Morgan Energy Partners, L.P. Several investigations to evaluate soil and groundwater conditions at the facility have been conducted since the early-1990s. The results of these investigations indicate that gasoline, diesel, and aviation fuels, including fuel additives - benzene, toluene, ethylbenzene, xylene (BTEX) and methyl-tertiary butyl ether (MTBE) - have been detected in groundwater beneath various portions of the facility. Contamination related to those impacts has potentially migrated beyond the facility boundary toward the Brisbane Landfill and the timber-lined channel.
- 5. Named Discharger:** SFPP, L.P., an operating partnership of Kinder Morgan Energy Partners, L.P. (herein SFPP) is the sole landowner and facility operator and is herein named the discharger.
- 6. Regulatory Status:** In November 1992, the Board adopted Site Cleanup Requirements (SCR) Order No. 92-141, which required investigation and remediation of on-site and potential off-site soil and groundwater contamination and monitoring to demonstrate remediation performance.
- 7. Purpose of Order:** The SFPP Brisbane Terminal has discharged petroleum fuel hydrocarbons, including MTBE, to soil and groundwater underlying the facility and potentially off-site. The petroleum fuel hydrocarbons have exceeded applicable water quality objectives for groundwater and could potentially threaten surface water quality in the adjacent timber-lined channel. The purpose of this Order is to require remediation of soil and groundwater contamination caused by releases from the facility, to a level protective of human and environmental health and beneficial uses of water resources considering current and reasonable future land and water uses. This Order establishes appropriate cleanup standards and requires 1) performance monitoring to demonstrate remedial action effectiveness, 2) removal of separate-phase liquid hydrocarbons to the extent practicable, 3) trigger levels for potential off-site impacts, 4) completion of a contingency plan should additional remedial measures become necessary, and 5) a monitoring program to provide an ongoing assessment of groundwater conditions and impacts from potential new releases at the facility.
- 8. Geology:** The site is located in the San Mateo Sedimentary Basin on the edge of a bedrock outcrop, which forms a knob separating Visitacion Valley to the north and Guadalupe Valley to the south. The western portion of the site is underlain by bedrock and the remaining portion is underlain by landfill refuse. The landfill refuse is underlain by fine grained marine deposits that lie upon the Franciscan Formation. The site vicinity is underlain by the Santa Clara Formation of Pliocene-to-Holocene age continental deposits comprised of unconsolidated to semi-consolidated gravel, sand, silt, and clay.

In the western portion of the site, which lies adjacent to the Union Pacific Railroad tracks, sediments consist of native soil or fill material and gravelly silt from surface grade to approximately 2 to 6 feet below ground surface (bgs). Bedrock exists below the gravelly silt to the maximum explored depth of 25 feet bgs. Landfill refuse is encountered to the total depth explored in the eastern portion of the site, except at the location of well MW-16, where native sediments or construction material placed between landfill cells was encountered.

- 9. Hydrogeology:** The site is located within the Visitacion Valley Groundwater Basin. The regional groundwater in the area of the site has been divided into two zones (A and B), separated by the Young Bay Mud (YBM). Zone A is the shallow water-bearing zone that lies above the YBM and is comprised of fill material, including landfill refuse that was placed in the vicinity to reclaim historic wetlands and open water. Zone B is located beneath the YBM. Monitoring data from the Brisbane Landfill indicate that there is a moderate upward hydraulic gradient between the A and B groundwater zones, and the YBM may act as an aquitard between the two zones.

Depth to groundwater in the A zone beneath the site ranges from about 8 to 17 feet bgs. Groundwater elevations typically exhibit seasonal fluctuations of approximately 1 to 4 feet. Groundwater flows in a radial pattern, outward from the center of the northern tank farm at gradients ranging from approximately 0.1 foot per foot (ft/ft) (Figure 2). Groundwater in the northern portion of the site generally flows north to northeast towards the timber-lined channel. Along the eastern facility boundary, data suggest that groundwater may flow west from the Brisbane Landfill toward the loading rack area at different times of the year. However, this phenomenon requires additional monitoring data to fully assess.

- 10. Hydrology:** The site is located about 2100 feet west of San Francisco Bay at an elevation of 25 feet above mean sea level (msl). The San Bruno Mountains are located west of the site, which rise to about 1,200 feet msl. The surface-water drainage from the San Bruno Mountains flows east toward the San Francisco Bay, collecting into two surface-water drainage areas referred to as Visitacion Valley and Guadalupe Valley.

The closest surface-water body is a timber-lined channel that borders the northern portion of the site and drains eastward across the Brisbane Landfill. This channel is tidally influenced, showing tidal water level fluctuations up to about three feet. Water within the timber-lined channel generally flows to the east towards the San Francisco Bay. However, water has been observed flowing to the west, away from the San Francisco Bay, during high tides. Water levels in the channel typically range from 4.5 to 6.5 feet above msl, with water levels measured during the highest high tides at approximately 10 feet above msl.

Immediately adjacent to the northern facility boundary is a wetland that is connected with the timber-lined channel. Storm water runoff from the facility discharges to the wetland, but only after visual inspection confirms that no petroleum hydrocarbon sheen is present. Hydraulic communication between the wetland and the channel is likely.

- 11. Storm Water Management:** Storm water at the facility is discharged at four locations around the facility perimeter designated as points A through D (Figure 3). Storm water discharged at points A, B, and C is collected from within the bermed tank farm area. Storm

water discharged at point D is collected from the paved, non-operational areas surrounding the bermed truck loading racks and the facility administration buildings. In addition, storm water collected from within the bermed truck loading rack area is passed through an oil-water separator and discharged to the Bayshore Sanitary District's sewer that runs along Tunnel Avenue.

Discharges from points A, B, C, and D are controlled manually with block valves, which are only opened if storm water is visually free of petroleum hydrocarbon sheen or discoloration. Discharge points A and D are located along the northern facility perimeter and storm water discharged at these points flows into the wetland immediately adjacent to the facility and toward the timber-lined channel. Discharge point B drains toward the open area along the Union Pacific Railroad tracks at the western boundary of the facility. Discharge point C collects in a natural depression in the open area along the southern facility perimeter. None of the discharge points utilize filtering devices, and it is likely that much of the storm water remains ponded along the facility perimeter until it percolates, evaporates, or discharges to adjacent wetlands and the timber-lined channel.

12. Storm Water Monitoring: In November 2006 and February 2007, storm water samples were collected pursuant to Board request. Samples were analyzed for total petroleum hydrocarbons as gasoline (TPH-g), total petroleum hydrocarbons as diesel fuel (TPH-d), BTEX, and MTBE. Samples were also analyzed for standard storm water quality parameters including total suspended solids (TSS), pH, and specific conductance. Samples were collected at discharge points A-D as shown in Figure 3 while storm water was being discharged beyond the facility perimeter. Results of the sampling are summarized in Table 1 below.

Table 1: Results of Storm Water Sampling Conducted in 2006-07

	November 2006				February 2007			
	A	B	C	D	A	B	C	D
TPH-g (ppb)	< 50	< 50	< 50	< 50	< 50	< 50	< 50	< 50
TPH-d (ppb)	54	78	61	320	250	370	200	360
BTEX (ppb)	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
MTBE (ppb)	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
TSS (ppm)	69	58	100	87	110	420	100	130

13. Remedial Investigation: SFPP has conducted numerous subsurface assessments to evaluate soil and groundwater conditions at the site since the early 1990s, some of which were in response to known spills and releases that occurred during tank filling or truck fueling operations. Assessment activities included the installation of 29 groundwater monitoring wells, 12 soil borings, tidal studies and aquifer testing, assessment of bedrock and landfill refuse occurrence, and installation of five separate phase liquid hydrocarbon (SPLH) monitoring and recovery well points. Tables 2 and 3 summarize the maximum contaminant concentrations in groundwater during the most recent three-year period (2005-2007) as measured in on-site and off-site wells, respectively. Figures 4a-d show the extent of MTBE and benzene in groundwater in 1998 and 2007, respectively. Details of remedial investigation activities are presented the following reports: 1) *Remedial Action Plan, LFR, June 29, 2007*, 2) *Monitored Natural Attenuation Evaluation in Support of the Remedial Action Plan, LFR, December 15, 2006*, and 3) *Semi-Annual Groundwater Monitoring Report, LFR, August 15, 2007*.

Table 2: Maximum Contaminant Concentrations in Groundwater Measured in On-Site Monitoring Wells^{1,2} (2005 through 2007)

Constituent	Contaminant Concentration (ug/l)	Basis
Gasoline (TPH-g) (C6-C12)	26,000	MW-21 (Dec-05); June 2007 RAP, Table 3
Diesel Fuel (TPH-d) (C9-C25)	17,000	MW-28 (Apr-07); June 2007 RAP, Table 3
Benzene	1,700	MW-28 (Apr-07); June 2007 RAP, Table 3
Toluene	86	MW-21 (Jun-05); June 2007 RAP, Table 3
Ethylbenzene	800	MW-21 (Oct-06); June 2007 RAP, Table 3
Xylenes	2,100	MW-21 (Dec-05); June 2007 RAP, Table 3
Methyl-tert Butyl Ether (MTBE)	6,800	MW-28 (Apr-07); June 2007 RAP, Table 3
tert-Butyl Alcohol (TBA)	16,000	MW-12 (Apr-07); June 2007 RAP, Table 3

¹ On-site wells include MWs: 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 12, 14, 15, 16, 17, 18, 19, 20, 21, and 28.

² Includes MWs 2, 12, 17, 18, 19, and 28, which have historically contained separate-phase liquid hydrocarbon.

Table 3: Maximum Contaminant Concentrations in Groundwater Measured in Off-Site Monitoring Wells¹ (2005 through 2007)

Constituent	Contaminant Concentration (ug/l)	Basis
Gasoline (TPH-g) (C6-C12)	360	MW-30 (Aug-06); June 2007 RAP, Table 3
Diesel Fuel (TPH-d) (C9-C25)	280	MW-30 (Aug-06); June 2007 RAP, Table 3
Benzene	25	MW-30 (Aug-06); June 2007 RAP, Table 3
Toluene	<1.0	June 2007 RAP, Table 3
Ethylbenzene	1.0	MW-22 (Jun-05); June 2007 RAP, Table 3
Xylenes	3.5	MW-22 (Jun-05); June 2007 RAP, Table 3
Methyl-tert Butyl Ether (MTBE)	190	MW-29 (Mar-06); June 2007 RAP, Table 3
tert-Butyl Alcohol (TBA)	620	MW-29 (Aug-06); June 2007 RAP, Table 3

¹ Off-site wells include MWs: 22, 23, 24, 25, 26, 27, 29, 30, and GM-13A.

14. Risk Assessment: Human and ecological health risks from exposure to impacted soil, groundwater, or associated vapors were assessed by comparison of contaminant levels to the Board's Environmental Screening Levels (ESLs) based on the current land use of the facility and surrounding properties. This risk evaluation is presented in the June 2007 Remedial Action Plan (RAP). This type of "tier 1" screening level risk assessment is appropriate for the facility because ESLs are conservative indicators considered safe for human and environmental exposure. Specific potential exposure pathways and/or receptors considered include 1) groundwater contamination potentially discharging to and affecting water quality within the adjacent timber-lined channel, 2) groundwater contamination volatilizing and potentially affecting indoor air within the facility's control room, and 3) direct facility worker contact with soil contamination. Findings indicate there are currently no unacceptable risks for these potential exposure pathways based on the current land use.

An updated and/or more detailed human and/or ecological health risk assessment will be required 1) if data indicate that reasonable potential human or ecological exposures exist as determined by the discharger or Board staff, 2) upon presentation of a credible, specific reuse/redevelopment plan to Board staff and the discharger by the property owner for areas immediately adjacent to the site where potential offsite impacts exist, or 3) upon any actual or proposed material change to the facility as determined by the discharger or Board staff. The purpose of the risk assessment would be to identify risks to potential human or ecological receptors posed by petroleum fuel hydrocarbons discharged from the facility both onsite and offsite, when applicable.

15. Corrective Action Plan: Several phases of remedial activities have been conducted at the site since 1998 in response to documented releases of petroleum fuel hydrocarbons to soil and groundwater and to address the presence of SPLH in specific portions of the site.

Remedial actions have included SPLH recovery, soil excavation, groundwater extraction, and dual-phase soil vapor and/or groundwater extraction. Historically, SPLH has been detected at different times in six monitoring wells and in the five SPLH monitoring points. However, throughout 2007, SPLH has been absent in all six monitoring wells and in all but one of the five SPLH monitoring points. When present, SPLH is removed using passive skimmers and hand bailing. Detailed discussion of remedial actions is presented in the June 2007 RAP.

The June 2007 RAP proposes a comprehensive plan to cleanup and monitor petroleum fuel hydrocarbons in soil and groundwater. The plan proposes monitored natural attenuation (MNA) as the preferred remedial alternative and provides lines of evidence to support its selection. This Order establishes appropriate cleanup standards and requires 1) performance monitoring to demonstrate MNA effectiveness, 2) removal of SPLH to the extent practicable, 3) trigger levels for potential off-site impacts, 4) completion of a contingency plan should additional remedial measures become necessary, and 5) a monitoring program to provide an ongoing assessment of groundwater conditions and impacts from potential new releases at the facility.

16. Basis for Cleanup Standards:

- a. **General:** State Board Resolution No. 68-16, "Statement of Policy with Respect to Maintaining High Quality of Waters in California," applies to this discharge and requires attainment of background levels of water quality, or the highest level of water quality which is reasonable if background levels of water quality cannot be restored. Cleanup levels other than background must be consistent with the maximum benefit to the people of the State, not unreasonably affect present and anticipated beneficial uses of such water, and not result in exceedance of applicable water quality objectives.

State Board Resolution No. 92-49, "Policies and Procedures for Investigation and Cleanup and Abatement of Discharges under Water Code Section 13304," applies to this discharge. This order and its requirements are consistent with the provisions of Resolution No. 92-49, as amended.

- b. **Beneficial Uses:** The Water Quality Control Plan for the San Francisco Bay Basin (Basin Plan) is the Board's master water quality control planning document. It designates beneficial uses and water quality objectives for waters of the State, including surface waters and groundwater. It also includes programs of implementation to achieve water quality objectives. The Basin Plan was duly adopted by the Board and approved by the State Water Resources Control Board, U.S. EPA, and the Office of Administrative Law where required.

Board Resolution No. 89-39, "Sources of Drinking Water," defines potential sources of drinking water to include all groundwater in the region, with limited exceptions for areas of high TDS, low yield, or naturally-high contaminant levels. Groundwater underlying and adjacent to the site qualifies as a potential source of drinking water.

The site resides within the boundaries of the Visitacion Valley Groundwater Basin, as defined in the Basin Plan. The Basin Plan designates the following existing and potential beneficial uses of groundwater in this basin, including underlying and adjacent to the site:

- Municipal and domestic supply (MUN)
- Industrial process supply (PROC)
- Industrial service supply (IND)
- Agricultural supply (AGR)

Groundwater discharge to the surface waters of the adjacent timber-lined channel likely occurs at different times of the year, based on measured groundwater and surface water levels. Based on water quality measurements, the groundwater is considered freshwater. Therefore, the groundwater beneath the site has the following additional existing and/or potential beneficial use as defined in the Basin Plan:

- Freshwater replenishment to surface waters (FRSH)

- c. **Basis for Groundwater Cleanup Standards:** The groundwater cleanup standards for the site are based on applicable water quality objectives. Although no current groundwater use has been identified, there is potential for future groundwater use in the vicinity, including for drinking water from deeper water-bearing zones. The current shallow groundwater contamination at the facility could affect this potential future use. Therefore, applicable water quality objectives include drinking water standards, which are the more stringent of U.S. EPA and California primary maximum contaminant levels (MCLs). Cleanup to this level will protect all existing and potential future beneficial uses of groundwater.

17. Future Changes to Cleanup Standards: The goal of this remedial action is to restore the beneficial uses of groundwater underlying and adjacent to the site. Results from other sites suggest that full restoration of beneficial uses to groundwater as a result of active remediation at this site may not be possible. If full restoration of beneficial uses is not technologically or economically achievable within a reasonable period of time, then the discharger may request modification to the cleanup standards or establishment of a containment zone, a limited groundwater pollution zone where water quality objectives are exceeded. Conversely, if new technical information indicates that cleanup standards can be surpassed, the Board may decide that further cleanup actions should be taken.

18. Reuse or Disposal of Extracted Groundwater: Board Resolution No. 88-160 allows discharges of extracted, treated groundwater from site cleanups to surface waters only if it has been demonstrated that neither reclamation nor discharge to the sanitary sewer is technically and economically feasible.

19. Basis for 13304 Order: California Water Code Section 13304 authorizes the Board to issue orders requiring the discharger to cleanup and abate waste where the discharger has caused or permitted waste to be discharged or deposited where it is or probably will be discharged into waters of the State and creates or threatens to create a condition of pollution or nuisance.

- 20. Cost Recovery:** Pursuant to California Water Code Section 13304, the discharger is hereby notified that the Board is entitled to, and may seek reimbursement for, all reasonable costs actually incurred by the Board to investigate unauthorized discharges of waste and to oversee cleanup of such waste, abatement of the effects thereof, or other remedial action, required by this order.
- 21. CEQA:** This action is an order to enforce the laws and regulations administered by the Board. As such, this action is categorically exempt from the provisions of the California Environmental Quality Act (CEQA) pursuant to Section 15321 of the Resources Agency Guidelines.
- 22. Notification:** The Board has notified the discharger and interested agencies and persons of its intent to update waste discharge requirements and has provided them with an opportunity to submit their written views and recommendations.
- 23. Public Hearing:** The Board, in a public meeting, heard and considered all comments pertaining to the proposed waste discharge requirements for the site.

IT IS HEREBY ORDERED, pursuant to Section 13304 and Section 13263 of the California Water Code, that the discharger (and/or its agents, successors, or assigns) must cleanup and abate the effects described in the above findings as follows:

A. PROHIBITIONS

1. The discharge of wastes or hazardous substances in a manner which will degrade water quality or adversely affect beneficial uses of waters of the State is prohibited.
2. Further significant migration of wastes or hazardous substances through subsurface transport to waters of the State is prohibited.
3. Activities associated with the subsurface investigation and cleanup which will cause significant adverse migration of wastes or hazardous substances are prohibited.

B. REMEDIAL ACTION PLAN AND CLEANUP STANDARDS

1. **Implement Corrective Action:** The discharger must implement corrective action as necessary to comply with the requirements of this Order.
2. **Groundwater Cleanup Standards:** Groundwater, including on-site and off-site, that is impacted by petroleum fuel hydrocarbons attributable to releases at the site must be cleaned up to the final standards identified below.

Constituent	Standard (ug/l)	Basis
Gasoline (TPH-g) (C ₆ -C ₁₂)	100	CA secondary MCL ¹
Diesel Fuel (TPH-d) (C ₉ -C ₂₅)	100	CA secondary MCL
Benzene	1	CA primary MCL
Toluene	40	CA secondary MCL
Ethylbenzene	30	CA secondary MCL
Xylenes	20	CA secondary MCL
Methyl-tert Butyl Ether (MTBE)	5	CA secondary MCL
tert-Butyl Alcohol (TBA)	12	CA State notification level ²

¹ "MCL" means maximum contaminant level, which is an enforceable promulgated drinking water standard. Primary MCLs consider protection of human health based on drinking the water. Secondary MCLs consider nuisance affects, such as taste and odor and are typically applied whenever they are lower (i.e., more protective) than the primary MCL or if no promulgated primary MCL exists.

² The State notification level is a health-based drinking water standard set at a level above which notification to drinking water consumers is required by the California Department of Public Health.

C. TASKS

- 1. Implementation of Remedial Action Plan (RAP) and Self-Monitoring Program (SMP):** The discharger must immediately implement the remedial actions proposed in the June 2007 RAP and as may be subsequently revised. At a minimum, implementation of remedial actions must be demonstrated through compliance with the SMP attached to this Order, and as may be revised by the Executive Officer. The attached SMP is designed to collect information necessary to evaluate the potential migration of chemicals of concern (COCs) associated with known releases at the site and the effectiveness of remedial actions implemented to address those releases. The attached SMP may be revised at the discretion of the Executive Officer, as necessary to better evaluate site conditions, discharges, and remedial action effectiveness.

COMPLIANCE DATE: Immediate

- 2. Contingency Plan for Separate-Phase Liquid Hydrocarbon (SPLH) Removal:** The discharger must submit a technical report, acceptable to the Executive Officer, which proposes appropriate measures for removal of SPLH, when present, to the extent practicable. Contingency SPLH removal measures must consider all appropriate passive and active methods, including dual-phase extraction. The plan must also include a strategy, with specific triggers and a time table, acceptable to the Executive Officer, for when and how SPLH removal measures will be implemented. The discharger must install any monitoring devices and conduct any testing necessary to appropriately and adequately evaluate SPLH removal measures and ensure that SPLH removal is occurring to the extent that is economically and technologically practicable. Certification that contingency measures have been implemented and discussion of their performance and effectiveness must be included in the self-monitoring reports submitted pursuant to Task No. 1.

COMPLIANCE DATE: July 30, 2008

- 3. Evaluation of Storm Water Best Management Practices:** The discharger must submit a technical report, acceptable to the Executive Officer, which evaluates the appropriateness and effectiveness of best management practices (BMPs) for storm water at the facility. At a minimum, the report must include evaluation of containment, filtering, and other practical treatment methods to best minimize sediment and fuel hydrocarbon transport via storm water beyond secondary containment areas and the facility boundary. The report must include recommended BMPs and a schedule for implementation, including installation of any necessary devices, facilities, or structures, prior to October 15, 2008.

COMPLIANCE DATE: July 30, 2008

- 4. Evaluation of Monitoring Well Construction:** The discharger must submit a technical report, acceptable to the Executive Officer, which evaluates the appropriateness and effectiveness of all monitoring wells. The evaluation must consider total well depth, screen interval, and well location in terms of providing adequate monitoring data for plume monitoring and remediation effectiveness as required pursuant to the tasks specified in this Order. The report must propose destruction, repair, and/or replacement of any deficient

monitoring wells. The report must also propose construction of any new wells as necessary to adequately provide any and all monitoring data needed to adequately perform the tasks specified in this Order.

COMPLIANCE DATE: September 30, 2008

5. **Evaluation of Adjacent Landfill Effects and Potential Co-Mingled Plumes:** The discharger must submit a technical report, acceptable to the Executive Officer, which provides an evaluation of potential co-mingled plumes between the facility and the Brisbane Landfill along the eastern facility boundary. At a minimum, the evaluation must consider groundwater levels, gradients, and contaminants detected in groundwater measured at facility and landfill monitoring wells. The evaluation must identify where groundwater impacts are believed to be co-mingled, if at all, and how monitoring of such impacts will be conducted. The discharger must install new monitoring devices (wells, piezometers, etc.) and conduct sampling and monitoring using such devices, as necessary, to perform this evaluation.

COMPLIANCE DATE: November 30, 2008

6. **Trigger Levels for Potential Off-Site Impacts:** The discharger must submit a technical report, acceptable to the Executive Officer, which proposes concentration limits for petroleum fuel hydrocarbons in groundwater, which will serve as triggers for additional remediation. "Trigger" levels are meant to apply to groundwater impacts, at the property boundary and off-site, which are attributable to releases at the facility. At a minimum, trigger levels must be based on the magnitude of contaminant concentrations in groundwater at the property boundary and off-site for the most recent three-year period. Trigger levels must be set at a level, which when exceeded, is a strong indication of a new release or significant change in site conditions or plume behavior. Trigger levels must be re-evaluated every three years as long as groundwater impacts, attributable to releases at the facility, exceed cleanup standards. The report must identify specific monitoring wells where trigger levels will apply and must propose procedures, such as immediate re-sampling, to be used to confirm a trigger level exceedance. A confirmed exceedance of a trigger level must be followed by bi-monthly or more frequent sampling of the suspect monitoring well for at least one year, or until constituent concentrations drop below trigger levels for three consecutive bi-monthly sampling events.

COMPLIANCE DATE: January 30, 2009 then every three years thereafter

7. **Contingency Remediation Plan:** In the event that a trigger level is exceeded for any three of six consecutive bi-monthly sampling events, including the initial sample exceedance, the discharger must submit a technical report, acceptable to the Executive Officer, which proposes a contingency remediation plan. The contingency remediation plan must identify the source of the exceedance and must propose a method for active source control and/or

cleanup. The contingency remediation plan must also propose a method to control and/or cleanup all impacts in excess of trigger levels at the property boundary and off-site for impacts attributable to the facility, regardless if a new source is identified.

COMPLIANCE DATE: 60 days after third confirmed exceedance

8. **Remedial Action Effectiveness Evaluation:** The discharger must submit a technical report, acceptable to the Executive Officer, which evaluates the effectiveness of all remedies implemented at the site to contain and/or cleanup contamination or contaminated media such as soil, soil-gas, separate-phase liquid product, and groundwater, addressed by this Order. At a minimum, demonstration of remedial action effectiveness must be based on adequately measured soil, geologic, hydrologic, and water quality parameters, including contaminant concentrations and water levels, and on appropriately calculated hydraulic, pressure, and chemical gradients, as necessary. The remedial action effectiveness evaluation must also address the following:

- a. Summary of effectiveness in controlling contaminant migration and protecting human health and the environment
- b. Comparison of contaminant concentration trends with cleanup standards
- c. Remediation performance data (e.g., contaminant mass removed or destroyed, volume and mass of separate-phase product removed, volume of groundwater extracted, mass removed per million gallons extracted, mass flux reduction)
- d. Cost effectiveness data (e.g., total cost, cost per unit mass of contaminant removed or destroyed, cost per unit mass flux reduction)
- e. Summary of additional investigations (including results) and significant modifications to remediation systems
- f. Additional remedial actions proposed to meet cleanup standards (if applicable) including a time schedule for implementing such actions

The remedial action effectiveness evaluation must include visual presentation of the full current extent of groundwater impacts, in excess of established cleanup standards, using posted contaminant concentrations next to each well or point where measured. For remediation by natural attenuation, which relies on intrinsic biodegradation, remedial action effectiveness must be based on established spatial and temporal trends of contaminant concentrations and indicator parameters. At a minimum, indicator parameters for intrinsic biodegradation in groundwater (aerobic and anaerobic) must include dissolved oxygen, nitrate, sulfate, ferrous iron, methane, carbon dioxide, oxygen-reduction (redox) potential, Total Kjeldahl Nitrogen (TKN), phosphate, and pH. The following data presentation methods must be used to demonstrate spatial and temporal trends of contaminant concentrations and indicator parameters:

- a. Figures showing the current and historic extent of contamination
- b. Graphs showing current and historic contaminant concentrations and water levels versus time in the direction of groundwater flow and at plume boundaries
- c. Graphs showing current and historic contaminant concentrations versus distance in the direction of groundwater flow

- d. Figures showing the current and historic spatial distribution of indicator parameters for intrinsic biodegradation
- e. Graphs showing current and historic indicator parameter concentrations versus time in the direction of groundwater flow and at plume boundaries
- f. Graphs showing current and historic indicator parameter concentrations versus distance in the direction of groundwater flow

In addition, the remedial action effectiveness evaluation must estimate the time to reach cleanup standards in groundwater, both on-site and off-site, using regression analysis of temporal contaminant concentration trends.

COMPLIANCE DATE: January 30, 2011

9. **Three-Year Remedial Action Effectiveness Evaluation:** Every three years, the discharger must submit a technical report, acceptable to the Executive Officer, which contains a remedial action effectiveness evaluation as described in Task No. 8. Remedial action effectiveness evaluations must be submitted every three years until the groundwater cleanup standards are achieved. Each three-year evaluation must be tailored to the specific remediation type and/or system implemented at the site at that time, if it differs from what is currently proposed. A work plan must be submitted at least six months prior to the three-year evaluation report due date, if changes to the methods described in Task No. 8 are proposed. The work plan must describe the proposed evaluation methods. If cleanup standards have not been met and are not projected to be met within a reasonable time, the report must assess the technical practicability of meeting cleanup standards and may propose an alternative cleanup strategy and schedule.

COMPLIANCE DATE: January 30, 2014, then every three years thereafter

10. **Risk Assessment:** When required, the discharger must submit a technical report, acceptable to the Executive Officer, which contains a human and/or ecological health risk assessment (risk assessment). An updated and/or more detailed human and/or ecological health risk assessment will be required 1) if data indicate that reasonable potential human or ecological exposures exist as determined by the discharger or Board staff, 2) upon presentation by the property owner of a credible, specific reuse and/or redevelopment plan to Board staff and the discharger for areas immediately adjacent to the site where offsite impacts may exist, or 3) upon any actual or proposed material change to the facility as determined by the discharger or Board staff. The purpose of the risk assessment would be to identify risks to potential human or ecological receptors posed by petroleum fuel hydrocarbons discharged from the facility both onsite and offsite, when applicable.

COMPLIANCE DATE: 90 days after trigger

11. **Proposed Curtailment:** Submit a technical report acceptable to the Executive Officer containing a proposal to curtail remediation. Curtailment includes system closure (e.g., well abandonment), system suspension (e.g., cease extraction but wells retained), and significant system modification (e.g., major reduction in extraction rates, closure of individual extraction wells within extraction network). The report should include the rationale for

curtailment. Proposals for final closure should demonstrate that cleanup standards have been met, contaminant concentrations are stable, and contaminant migration potential is minimal.

COMPLIANCE DATE: 60 days prior to proposed curtailment

12. **Implementation of Curtailment:** Submit a technical report acceptable to the Executive Officer documenting completion of the tasks identified in Task 11.

COMPLIANCE DATE: 60 days after Executive Officer approval

13. **Evaluation of New Health-Based Criteria:** Submit a technical report acceptable to the Executive Officer evaluating the effect on the approved remedial action plan of revising one or more cleanup standards in response to revision of drinking water standards, maximum contaminant levels, or other health-based criteria.

COMPLIANCE DATE: 90 days after requested by Executive Officer

14. **Evaluation of New Technical Information:** Submit a technical report acceptable to the Executive Officer evaluating new technical information that bears on the approved remedial action plan and cleanup standards for this site. In the case of a new cleanup technology, the report should evaluate the technology using the same criteria used in the feasibility study. Such technical reports will not be requested unless the Executive Officer determines that the new information is reasonably likely to warrant a revision in the approved remedial action plan or cleanup standards.

COMPLIANCE DATE: 90 days after requested by Executive Officer

15. **Delayed Compliance:** If the discharger is delayed, interrupted, or prevented from meeting one or more of the completion dates specified for the above tasks, the discharger must promptly notify the Executive Officer, and the Board or the Executive Officer may consider revision to this Order.

D. PROVISIONS

1. **No Nuisance:** The storage, handling, treatment, or disposal of polluted soil or groundwater must not create a nuisance as defined in California Water Code Section 13050(m).
2. **Good O&M:** The discharger must maintain in good working order and operate as efficiently as possible any facility or control system installed to achieve compliance with the requirements of this Order.
3. **Cost Recovery:** The discharger must be liable, pursuant to California Water Code Section 13304, to the Board for all reasonable costs actually incurred by the Board to investigate unauthorized discharges of waste and to oversee cleanup of such waste, abatement of the effects thereof, or other remedial action, required by this Order. If the site addressed by this Order is enrolled in a State Board-managed reimbursement program, reimbursement must be made pursuant to this Order and according to the procedures established in that program. Any disputes raised by the discharger over reimbursement amounts or methods used in that program must be consistent with the dispute resolution procedures for that program.
4. **Access to Site and Records:** In accordance with California Water Code Section 13267(c), the discharger must permit the Board or its authorized representative:
 - a. Entry upon premises in which any pollution source exists, or may potentially exist, or in which any required records are kept, which are relevant to this Order.
 - b. Access to copy any records required to be kept under the requirements of this Order.
 - c. Inspection of any monitoring or remediation facilities installed in response to this Order.
 - d. Sampling of any groundwater or soil which is accessible, or may become accessible, as part of any investigation or remedial action program undertaken by the discharger.
5. **Contractor / Consultant Qualifications:** All technical documents must be signed by and stamped with the seal of a California registered geologist, a California certified engineering geologist, or a California registered civil engineer.
6. **Lab Qualifications:** All samples must be analyzed by State-certified laboratories or laboratories accepted by the Board using approved EPA methods for the type of analysis to be performed. All laboratories must maintain quality assurance/quality control (QA/QC) records for Board review. This provision does not apply to analyses that can only reasonably be performed on-site (e.g., temperature).

7. **Document Distribution:** Copies of all correspondence, technical reports, and other documents pertaining to compliance with this Order must be provided to the following agencies. The Executive Officer may modify this list as needed.
 - a. The Board
 - b. City of Brisbane
 - c. San Mateo County Department of Environmental Health
 - d. Brisbane Baylands Community Advisory Group
8. **Electronic Reporting:** In addition to print submittals, all reports submitted pursuant to this Order must be submitted as electronic files in PDF format. The Board has implemented a document imaging system, which is ultimately intended to reduce the need for printed report storage space and streamline the public file review process. Documents in the imaging system may be viewed, and print copies made, by the public, during file reviews conducted at the Board's office. PDF files can be created by converting the original electronic file format (e.g., Microsoft Word) and/or by scanning printed text, figures & tables.

Upon request by Board staff, monitoring results, including water level measurements, sample analytical results, coordinates, elevations, etc., must be provided electronically in Microsoft Excel® or similar spreadsheet format. This format facilitates data computations and/or plotting that Board staff may undertake during their review. Data tables submitted in electronic spreadsheet format will not be included in the case file for public review as long as a PDF version is included.

All electronic files, whether in PDF or spreadsheet format, must be submitted via the Board's file transfer protocol (FTP) site, email (only if the file size is less than 3 MB) or on CD. CD submittals may be included with the print report. Email notification should be provided to Board staff whenever a file is uploaded to the Board's FTP site.

9. **Reporting of Changed Owner or Operator:** The discharger must file a technical report on any changes in site occupancy or ownership associated with the property described in this Order.
10. **Reporting of Hazardous Substance Release:** If any hazardous substance is discharged in or on any waters of the State, or discharged or deposited where it is, or probably will be, discharged in or on any waters of the State, the discharger must report such discharge to the Board by calling (510) 622-2369 during regular office hours (Monday through Friday, 8:00 to 5:00). A written report must be filed with the Board within five working days. The report must describe the nature of the hazardous substance, estimated quantity involved, duration of incident, cause of release, estimated size of affected area, nature of effect, corrective actions taken or planned, schedule of corrective actions planned, and persons/agencies notified. This reporting is in addition to reporting to the Office of Emergency Services required pursuant to the Health and Safety Code.
11. **Implementation of Self-Monitoring Program:** The discharger must implement the Self-Monitoring Program attached to this Order and as may be revised by the Executive Officer.

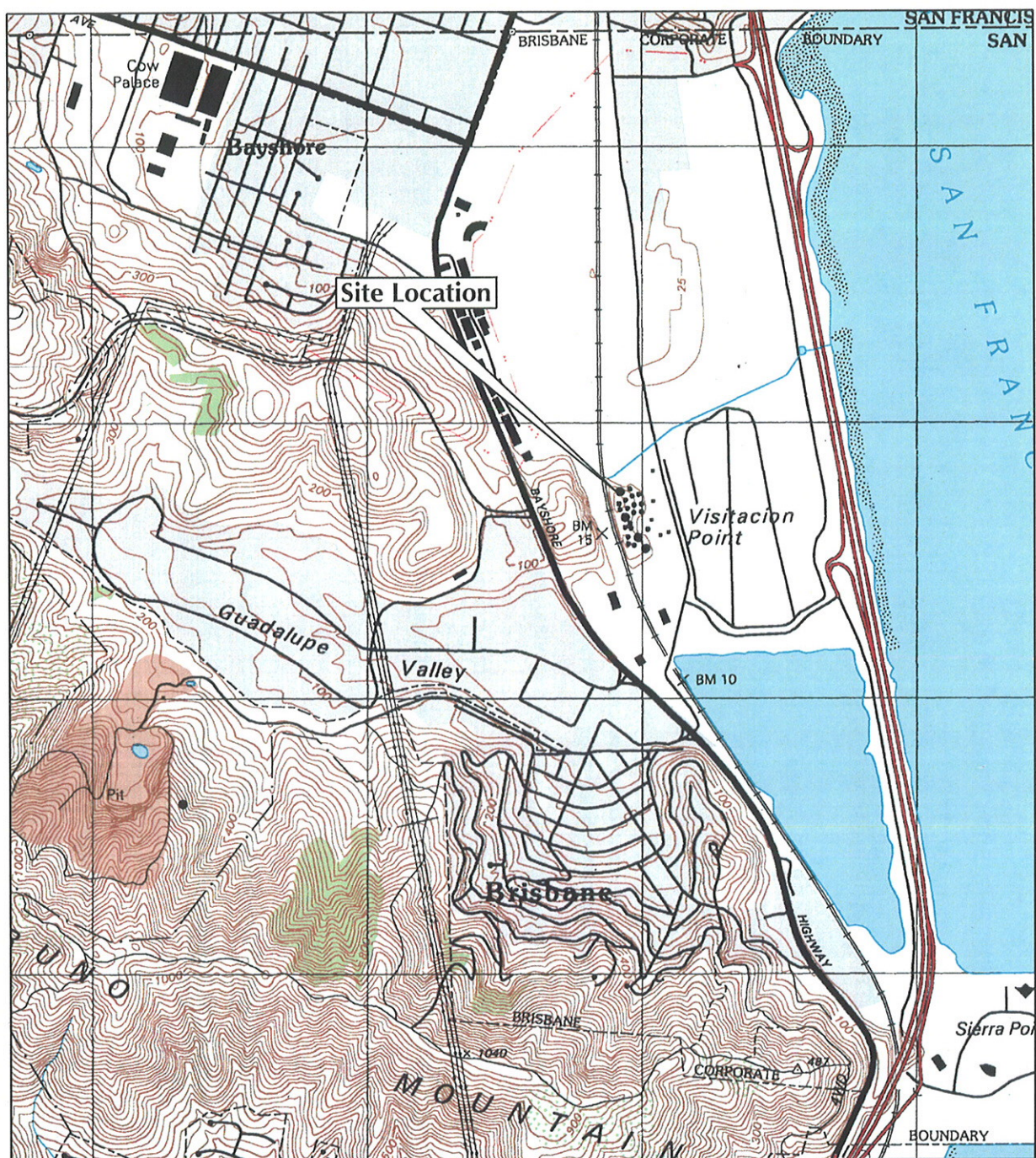
12. Rescission of Existing Order: This Order supercedes and rescinds Order No. 92-141.

13. Periodic SCR Review: The Board will review this Order periodically and may revise it when necessary.

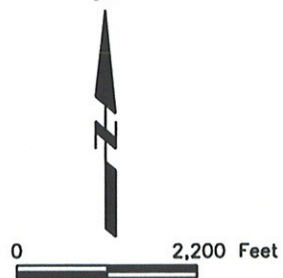
I, Bruce H. Wolfe, Executive Officer, do hereby certify that the foregoing is a full, true, and correct copy of an Order adopted by the California Regional Water Quality Control Board, San Francisco Bay Region, on April 9, 2008.

Bruce H. Wolfe
Executive Officer

Attachments: Figure 1: Site Location Map
 Figure 2: Groundwater Monitoring Locations and Elevation Contours
 Figure 3: Storm Water Monitoring Locations
 Figure 4A-D: Groundwater Plume Isoconcentration Maps for MTBE &
 Benzene
 Self-Monitoring Program



Source: USGS Topographic Map, San Francisco South, 1995

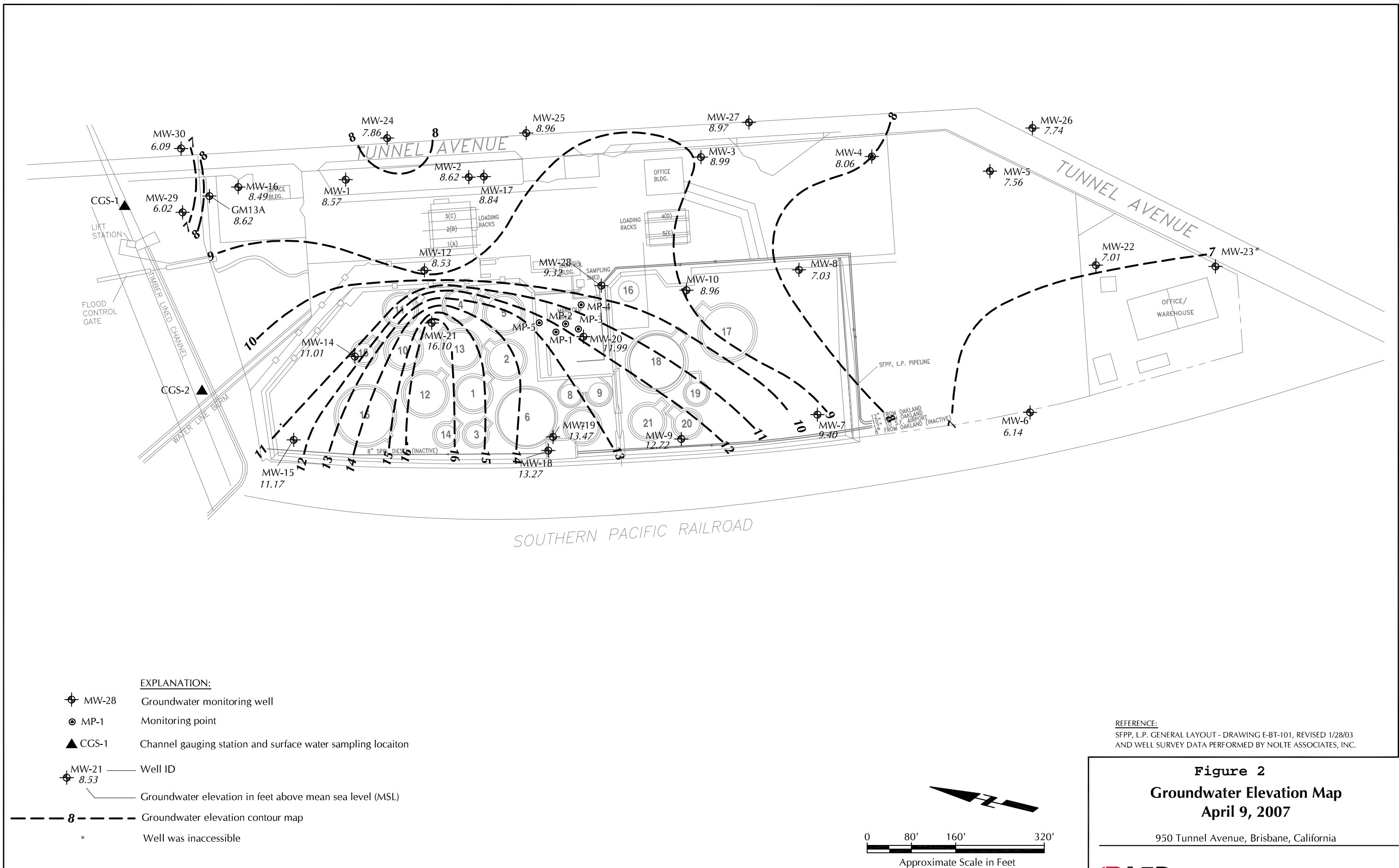


Site Location Map

950 Tunnel Avenue, Brisbane, California



Figure 1



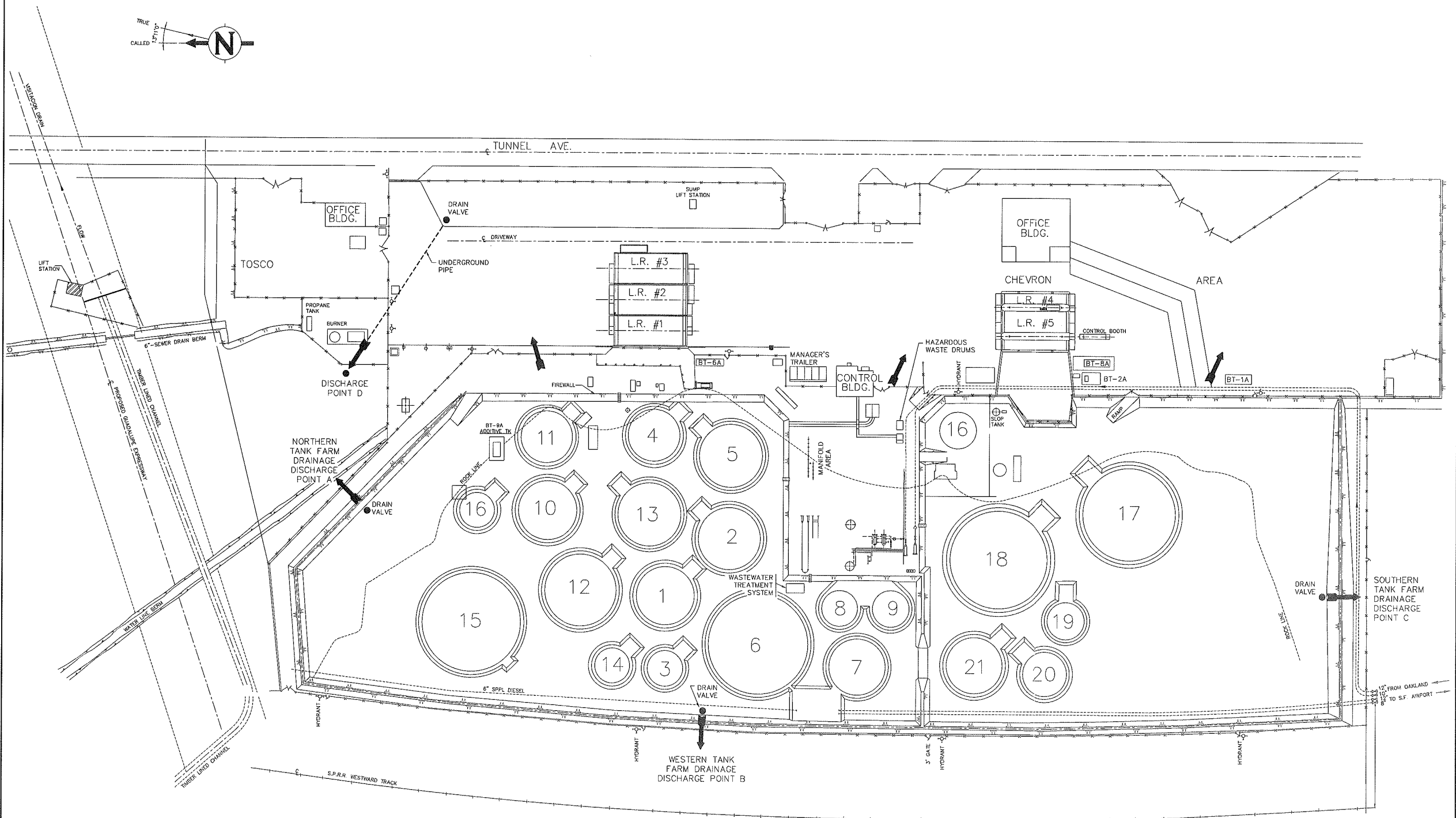
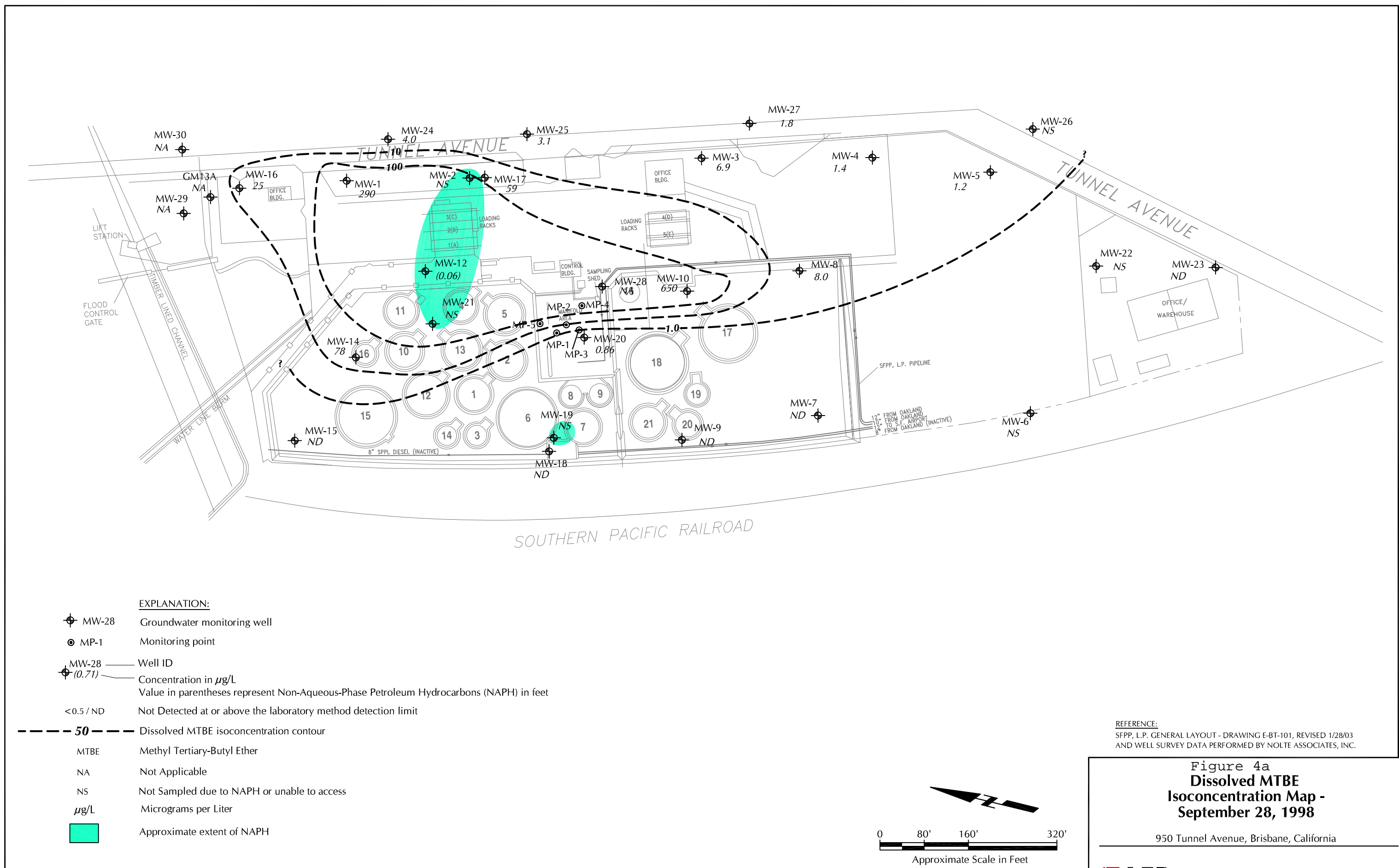
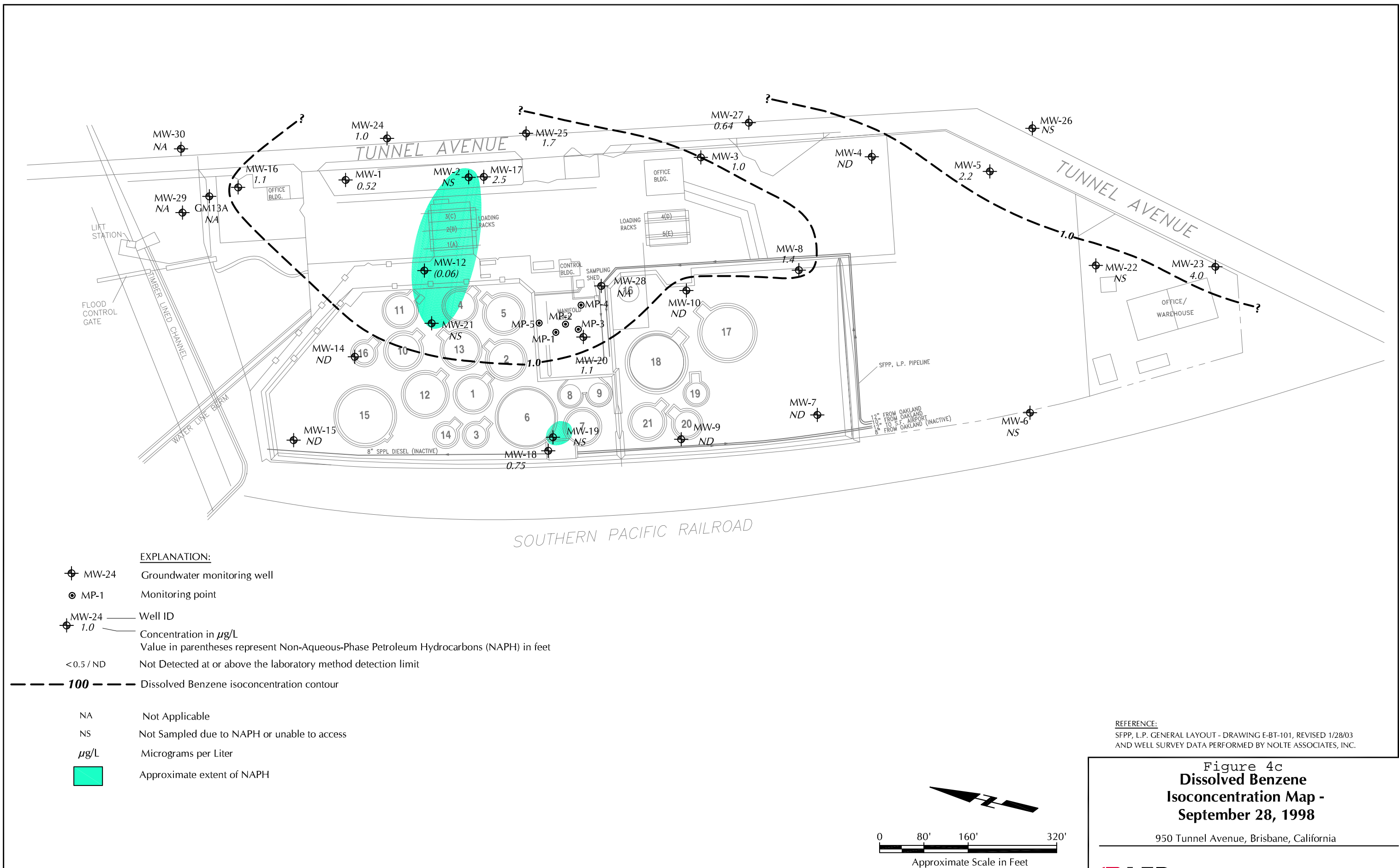
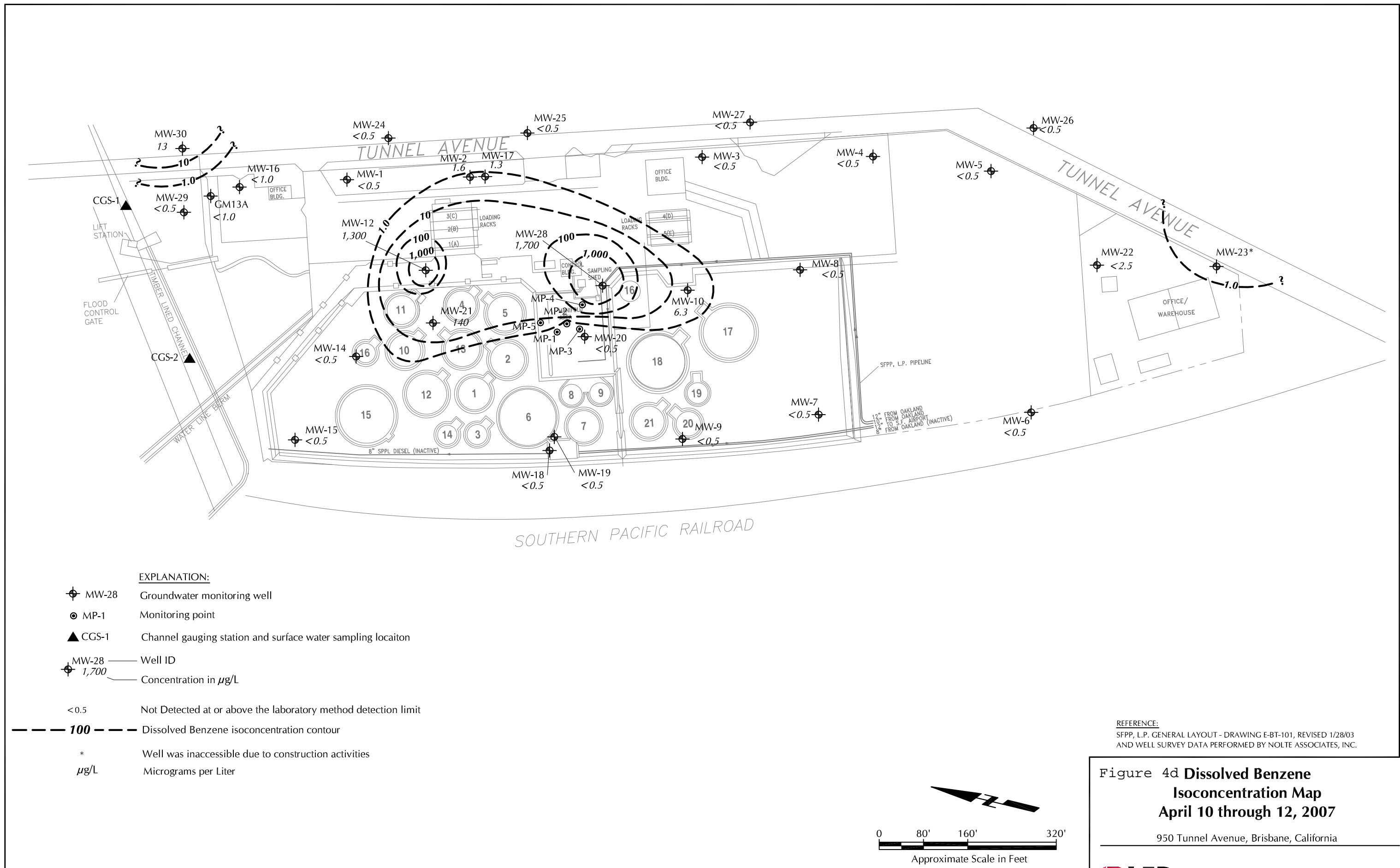


Figure 3
Storm Water Monitoring Locations







CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD
SAN FRANCISCO BAY REGION

SELF-MONITORING PROGRAM FOR
SITE CLEANUP REQUIREMENTS ORDER No. R2-2008-0019
ADOPTED APRIL 9, 2008 FOR

SFPP, L.P., AN OPERATING PARTNERSHIP OF
KINDER MORGAN ENERGY PARTNERS, L.P.

For the

SFPP, L.P. BRISBANE TERMINAL
BRISBANE, SAN MATEO COUNTY

1. **Authority and Purpose:** The Board requests the technical reports required in this Self-Monitoring Program pursuant to Water Code Sections 13267 and 13304. This Self-Monitoring Program is intended to document compliance with Board Order No. R2-2008-0019 (site cleanup requirements).
2. **Monitoring Requirements:** The discharger must perform monitoring (water level measurement, observations, and analytical sampling) according to Table SMP-1, which specifies monitoring location ID, frequencies, parameters, and analytes. Monitoring locations are shown in Figures SMP-1 and SMP-2. The discharger must sample any new monitoring or extraction wells quarterly and analyze groundwater samples for the same constituents as shown in Table SMP-1. The discharger may propose changes in the above table; any proposed changes are subject to Executive Officer approval.
3. **Reporting Requirements:** The discharger must submit self-monitoring reports (SMRs) to Board staff in accordance with the following schedule. Reports due at the same time may be combined into one report for convenience, as long as monitoring activities and results pertaining to each monitoring period are clearly distinguishable.

Reporting Frequency	Report Due Dates
Semi-Annual	February 15, August 15

At a minimum, each SMR must include the following information:

- a. **Transmittal Letter:** A cover letter transmitting the essential points must be included with each monitoring report. The transmittal letter must discuss any violations during the reporting period and actions taken or planned to correct the problem. The letter must also certify the completion of all monitoring requirements. The letter must be signed by the

dischargers' principal executive officer or his/her duly authorized representative, and must include a statement by the official, under penalty of perjury, that the report is true and correct to the best of the official's knowledge.

- b. **Graphic Presentation:** The following maps, figures, and graphs (if applicable) must be included in each SMR to visually present data collected pursuant to this SMP:
- (1) Plan-view maps showing all monitoring and sampling locations, surface water bodies, and site/property boundaries
 - (2) Groundwater level/piezometric surface contour maps for each groundwater-bearing zone of interest showing inferred groundwater gradients and flow directions under/around each waste management unit, based upon the past and present water level elevations and pertinent visual observations
 - (3) Post-plot maps with analyte concentration posted adjacent to each sampling location and/or iso-concentration contour maps displaying analyte concentrations and sample locations
 - (4) Concentration vs. time graphs for key sampling parameters for select sampling locations
 - (5) Any other maps, figures, photographs, cross-sections, graphs, and charts necessary to visually demonstrate the appropriateness and effectiveness of sampling, monitoring, characterization, investigation, or remediation activities relative to the goals of this SMP
- c. **Tabular Presentation:** The following data (if applicable) must be presented in tabular form and included in each SMR to show a chronological history and allow quick and easy reference:
- (1) Well designations
 - (2) Well location coordinates (latitude and longitude)
 - (3) Well construction (including top of well casing elevation, total well depth, screen interval depth below ground surface, and screen interval elevation)
 - (4) Groundwater depths
 - (5) Groundwater elevations
 - (6) Horizontal groundwater gradients
 - (7) Vertical groundwater gradients (including comparison wells from different zones), when appropriate
 - (8) Phase-separated product elevations
 - (9) Phase-separated product thicknesses
 - (10) Current analytical results (including analytical method and detection limits for each constituent)
 - (11) Historical analytical results (including at least the past five years unless otherwise requested)
 - (12) Measurement dates
 - (13) Groundwater extraction, including:
 - (a) Average daily extraction rate
 - (b) Total volume extracted for monitoring period
 - (c) Cumulative total volume extracted since system inception

- (14) Contaminant mass removal, including:
 - (a) Average daily removal rate
 - (b) Total mass removed for monitoring period
 - (c) Cumulative total mass removed since system inception
 - d. **Discussion:** Discussion of the following information, based on field and laboratory data results, must be provided in each SMR:
 - (1) Data Interpretations
 - (2) Conclusions
 - (3) Recommendations
 - (4) Newly implemented or planned investigations & remedial measures
 - (5) Data anomalies
 - (6) Variations from protocols
 - (7) Condition of wells
 - (8) Explanation why monitoring could not be performed at any required location
 - e. **Appendices:** The following information must be provided as appendices in electronic format (PDF format). Hard copies of the following information should be submitted only if requested otherwise by Board staff.
 - (1) New boring and well logs
 - (2) Method and time of water level measurements
 - (3) Purging methods and results including the type of pump used, pump placement in the well, pumping rate, equipment and methods used to monitor field pH, temperature, and conductivity, calibration of the field equipment, pH, temperature, conductivity, and turbidity measurements, and method of disposing of the purge water
 - (4) Sampling procedures, field and travel blanks, number and description of duplicate samples, type of sample containers and preservatives used, the date and time of sampling, the name of the person actually taking the samples, and any other relevant observations
 - (5) Documentation of laboratory results, analytical methods, detection limits, and Quality Assurance/Quality Control (QA/QC) procedures for the required sampling.
4. **Violation Reports:** If the discharger violates requirements in the Site Cleanup Requirements, then the discharger must notify the Board office by telephone as soon as practicable once the discharger has knowledge of the violation. Board staff may, depending on violation severity, require the discharger to submit a separate technical report on the violation within five working days of telephone notification.
5. **Other Reports:** The discharger must notify the Board in writing prior to any site activities, such as construction or underground tank removal, which have the potential to cause further migration of contaminants or which would provide new opportunities for site investigation.

6. **Record Keeping:** The discharger or its agent must retain data generated for the above reports, including lab results and QA/QC data, for a minimum of six years after origination and must make them available to the Board upon request.
7. **SMP Revisions:** Revisions to the Self-Monitoring Program may be ordered by the Executive Officer, either on his/her own initiative or at the request of the discharger. Prior to making SMP revisions, the Executive Officer will consider the burden, including costs, of associated self-monitoring reports relative to the benefits to be obtained from these reports.
8. **Electronic Reporting:** In addition to print submittals, all SMRs submitted pursuant to this SMP must be submitted as electronic files in PDF format. The Board has implemented a document imaging system, which is ultimately intended to reduce the need for printed report storage space and streamline the public file review process. Documents in the imaging system may be viewed, and print copies made, by the public, during file reviews conducted at the Board's office. PDF files can be created by converting the original electronic file format (e.g., Microsoft Word) and/or by scanning printed text, figures and tables.

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9. **Maintenance of Written Records:** The discharger must maintain information required pursuant to this SMP for at least five years. The five-year period of retention must be extended during the course of any unresolved litigation regarding this discharge or when requested by the Board.

Attachments: Table SMP-1
Figures SMP-1 & SMP-2

Table SMP-1
SFPP, L.P. Brisbane Terminal, Self-Monitoring Program

Well ID	Well Construction Details					Monitoring Parameters and Frequency							
	date installed	well depth	well elevation	screen interval	screen interval	Water Level	SPLH ⁽²⁾	TPH-g ⁽³⁾	TPH-d ⁽⁴⁾	BTEX ⁽⁵⁾	MtBE ⁽⁶⁾	Field ⁽⁷⁾	IPs ⁽⁸⁾
		fbgs	ft, MSL	fbgs	ft, MSL								
"A" Zone⁽¹⁾ GROUNDWATER													
MW-1	Jul-91	18	15.11	7-18		Q		SA-2,4	SA-2,4	SA-2,4	SA-2,4	SA-2,4	SA-2,4
MW-2	Jul-91	20	15.05	5-20		Q	Q	SA-2,4	SA-2,4	SA-2,4	SA-2,4	SA-2,4	SA-2,4
MW-3	Jul-91	25	20.37	14.5-25		Q		A-4	A-4	A-4	A-4	A-4	
MW-4	Jul-91	19	15.39	9-19		Q		A-4	A-4	A-4	A-4	A-4	
MW-5	Jul-91	21	19.51	11-21		Q		A-4	A-4	A-4	A-4	A-4	
MW-6	Jul-91	12	14.85	5-12		Q		A-4	A-4	A-4	A-4	A-4	
MW-7	Jul-91	20	14.76	5-20		Q		SA-2,4	SA-2,4	SA-2,4	SA-2,4	SA-2,4	SA-2,4
MW-8	Jul-91	16	16.96	6-16		Q		SA-2,4	SA-2,4	SA-2,4	SA-2,4	SA-2,4	SA-2,4
MW-9	Jul-91	11	16.46	4-11		Q		SA-2,4	SA-2,4	SA-2,4	SA-2,4	SA-2,4	SA-2,4
MW-10	Jul-91	15	14.54	5-15		Q		SA-2,4	SA-2,4	SA-2,4	SA-2,4	SA-2,4	SA-2,4
MW-12	Jul-91	20	16.62	5-20		Q	Q	SA-2,4	SA-2,4	SA-2,4	SA-2,4	SA-2,4	SA-2,4
MW-14	Jul-91	23	16.35	8-23		Q		A-4	A-4	A-4	A-4	A-4	
MW-15	May-93	24.5	20.60	4-24.5		Q		A-4	A-4	A-4	A-4	A-4	
MW-16	May-93	25	14.07	3-25		Q		SA-2,4	SA-2,4	SA-2,4	SA-2,4	SA-2,4	
MW-17	May-93	22	14.77	2.5-22		Q	Q	SA-2,4	SA-2,4	SA-2,4	SA-2,4	SA-2,4	SA-2,4
MW-18	May-93	21	19.89	2.5-21		Q	Q	A-4	A-4	A-4	A-4	A-4	
MW-19	May-93	23	20.56	3-23		Q	Q	SA-2,4	SA-2,4	SA-2,4	SA-2,4	SA-2,4	
MW-20	May-93	29.5	20.55	4.5-29.5		Q		SA-2,4	SA-2,4	SA-2,4	SA-2,4	SA-2,4	SA-2,4
MW-21	May-93	26	18.87	6-26		Q		SA-2,4	SA-2,4	SA-2,4	SA-2,4	SA-2,4	SA-2,4
MW-22	May-93	19.5	11.25	3-19.5		Q		A-4	A-4	A-4	A-4	A-4	
MW-23	May-93	20	10.60	3-20		Q		SA-2,4	SA-2,4	SA-2,4	SA-2,4	SA-2,4	SA-2,4
MW-24	Sep-94	25	15.64	5-25		Q		SA-2,4	SA-2,4	SA-2,4	SA-2,4	SA-2,4	SA-2,4
MW-25	Sep-94	24.5	17.08	4.5-24.5		Q		SA-2,4	SA-2,4	SA-2,4	SA-2,4	SA-2,4	SA-2,4
MW-26	Sep-94	33	25.69	13-33		Q		A-4	A-4	A-4	A-4	A-4	
MW-27	Sep-94	25	19.21	5-25		Q		SA-2,4	SA-2,4	SA-2,4	SA-2,4	SA-2,4	SA-2,4
MW-28	Sep-94	20	17.73	5-20		Q	Q	SA-2,4	SA-2,4	SA-2,4	SA-2,4	SA-2,4	SA-2,4
MW-29	Jul-00	11	13.31	4-11		Q		SA-2,4	SA-2,4	SA-2,4	SA-2,4	SA-2,4	SA-2,4
MW-30	Dec-04	14	12.77	3.5-14		Q		SA-2,4	SA-2,4	SA-2,4	SA-2,4	SA-2,4	SA-2,4
GM-13A	--	11.5	14.21	--		Q		SA-2,4	SA-2,4	SA-2,4	SA-2,4	SA-2,4	
"B" Zone⁽¹⁾ GROUNDWATER													
SPLH MONITORING POINTS													
MP-1						Q	Q						
MP-2						Q	Q						
MP-3						Q	Q						
MP-4						Q	Q						
MP-5						Q	Q						
STORM WATER													
A								TA	TA	TA	TA		
B								TA	TA	TA	TA		
C								TA	TA	TA	TA		
D								TA	TA	TA	TA		
SURFACE WATER													
CGS-1								S-2,4	S-2,4	S-2,4	S-2,4		

Footnotes:

- ⁽¹⁾ Regional groundwater is divided into two zones (A and B). Zone "A" is the shallow water-bearing zone that lies above the bay mud; Zone "B" is located beneath the bay mud. The bay mud is believed to act as an aquitard between the two zones.
- ⁽²⁾ Separate-phase liquid hydrocarbon thickness
- ⁽³⁾ Total Petroleum Hydrocarbons as Gasoline by EPA Method 8015B.
- ⁽⁴⁾ Total Petroleum Hydrocarbons as Diesel by EPA Method 8015B.
- ⁽⁵⁾ Benzene, Toluene, Ethylbenzene, and total Xylenes (BTEX) by EPA Method 8260B.
- ⁽⁶⁾ Fuel Oxygenates, including MtBE and TBA, by EPA Method 8260B.
- ⁽⁷⁾ Field parameters including pH, conductivity, temperature, turbidity, oxygen-reduction potential (ORP), dissolved oxygen (DO), and ferrous iron
- ⁽⁸⁾ Indicator parameters for intrinsic bioremediation including: methane (RSK-175), sulfate (300.0), nitrate as N (300.0), carbon dioxide, total Kjeldahl nitrogen (351.4), phosphate, total organic carbon (9060/415.1), chemical oxygen, demand (410.4), biological oxygen demand (5210B)

KEY

M = monthly monitoring

Q = quarterly monitoring according to the following schedule:

1st quarter = Jan thru Mar

2nd quarter = Apr thru Jun

3rd quarter = Jul thru Sep

4th quarter = Oct thru Dec

SA-2,4 = semi-annual monitoring during second and fourth quarters

A-4 = annual monitoring during fourth quarter

TA = Twice annually during the wet season. Storm water sampling should be conducted during the first storm event of the wet season, which produces runoff, and during one other storm event during the same wet season.

